

## **REMARKS**

This Amendment is responsive to the Advisory Action dated March 05, 2008, and the final Office Action dated December 26, 2007. The remarks submitted with Applicant's after-final response filed February 14, 2008 are applicable and are incorporated in this Amendment by reference. Applicant has amended claims 1, 13, 24, 25 and 37 and added new claims 49 and 50. Claims 1-50 are pending in the present application.

### **Examiner's Response to Applicant's Arguments**

In the Advisory Action, the Examiner clarified the basis of the rejection under 35 U.S.C. 103 as presented in the previous Final Office Action dated December 26, 2007. In particular, the Examiner provided guidance concerning his interpretation of the applied references relative to some of the limitations as set forth in each of Applicant's independent claims 1, 13, 25 and 37. However, Applicant maintains that the Examiner's interpretation of the claim limitations and the applied references is improper.

The Examiner stated that Ramesh, in column 2, lines 35-41, discloses "adjusting a received signal according to interpolation results, which clearly defines testing a wireless station." Applicant disagrees with the Examiner's assertion that adjusting a received signal according to interpolation results is equivalent to testing a wireless subscriber station. At column 2, lines 30-41, Ramesh describes "observing the amplitude of the received pilot symbols at discrete points in time, and interpolating to determine the amount of fading that occurred across the total transmitted signal." Per Ramesh, at column 2, lines 35-41, a "fading compensator compares the received faded time-compressed signal with the interpolation results and adjusts the amplitude and phase of the received signal accordingly to compensate for the fading that occurred in the transmission channel."

Hence, Ramesh describes a system that compensates for fading that may occur in received signals during transmission. Ramesh describes no concept of testing a wireless subscriber station. Instead, Ramesh uses the known characteristics of the pilot symbols to estimate the fading that occurred in the transmission channel and adjusts the amplitude and phase of the faded signal to compensate for the fading.<sup>1</sup> It is unclear how the adjustment of a received

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<sup>1</sup> Ramesh, Abstract

signal according to interpolation results would in any way relate to testing a subscriber station, much less digital creation of a plurality of independently faded signals, and transmission of such digitally created, independently faded signals to wireless subscriber stations under test, as set forth in the claims.

The Examiner stated that “the references do not require the actual term of ‘test’ and since the term in the claims is not elaborated on or specifically defined, the cited passage stated above can indeed define testing a wireless station.” Whether the term “test” is further defined or not, the lack of any teaching concerning digital creation and transmission of independently faded signals to wireless subscriber stations is highlighted by the fact that Ramesh and Marchetto fail to contemplate any sort of test. In particular, Ramesh and Marchetto clearly fail to suggest such features because they do not contemplate testing, and therefore would have had no reason to digitally create and transmit independently faded signals to wireless subscriber stations. The lack of any testing underscores the lack of any operations or structural features, as claimed, in order to support testing.

In the Advisory Action, the Examiner further stated that Ramesh is believed to teach the limitations of generating a broadcast signal, citing the description of transmission of an AM signal, at Col. 3, lines 21-25, of Ramesh. In addition, the Examiner characterized Ramesh as disclosing creating a plurality of independently faded signals from the broadcast signal, citing Col. 6, lines 17-21, of Ramesh. According to the Examiner, the cited passages of Ramesh “simply state that the AM signal is divided into a plurality of faded signals.” However, the Examiner’s analysis side-stepped the actual requirements of Applicant’s claims.

The claims do not merely require that a broadcast signal is divided into a plurality of faded signals, as would occur by propagation of the signal in a broadcast environment. On the contrary, as emphasized by Applicant in the previous response, the claims require digital creation of a plurality of independently faded signals, as set forth in claims 1, 25, and 37, and a digital processor configured to create a plurality of faded signals, per claim 13. As previously stated, the fading that may result from propagation of a signal in a transmission environment clearly is not produced by digitally creating faded signals, or creating faded signals in a digital processor.

Moreover, to the extent that the Examiner relied upon the passage at Col. 6, lines 17-21, separation of a received analog input signal into faded pilot symbols and faded AM signals bears

no relationship whatsoever to digitally creating independently faded signals and transmitting such signals to wireless subscriber stations. First, the separated or divided signals described by Ramesh are not digitally created and transmitted to wireless subscriber stations. Instead, the signals described by Ramesh are part of an AM signal received by a wireless subscriber station. Second, the separated or divided signals are not independently faded signals. Rather, such signals (pilot and AM) would appear to have the same type of fading. Otherwise, it seems that the pilot symbol-based compensation described by Ramesh would not even work.

In the Advisory Action, the Examiner apparently concluded that Ramesh does not describe transmitting a plurality of independently faded signals to wireless subscriber stations under test. However, the Examiner cited Marchetto as disclosing transmission of a plurality of (two) faded signals to another wireless device. Once again, the Examiner overlooked the actual requirements of Applicant's claims. As mentioned previously, the signals received by a wireless device in the Marchetto system are subjected to fading as they propagate within the transmission environment. Like Ramesh, Marchetto does not contemplate digital creation of a plurality of independently faded signals, and transmission of such digitally created, independently faded signals to wireless subscriber stations under test, as set forth in the claims.

Instead, Marchetto is directed to a system that compensates received signals that may experience fading during transit from a transmitter to the Marchetto receiver. Again, like Ramesh, the Marchetto system includes a transmitter that inserts pilot symbols within a data bearing signal and transmits the signal.<sup>2</sup> Marchetto states that the transmitted modulated signal is subject to loss of data due to simple fading as the signal is transmitted within a transmission environment.<sup>3</sup> The receiver in the Marchetto system "compensates for fading and interference."<sup>4</sup> There is simply no teaching in Marchetto, Ramesh, or any other reference that would have suggested digital creation of independently faded signals from a broadcast signal, and transmission of the independently faded signals to each of a plurality of wireless subscriber stations under test.

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<sup>2</sup> Marchetto, Abstract.

<sup>3</sup> *Id.*

<sup>4</sup> *Id.*

**Claim Rejection Under 35 U.S.C. § 103**

The Final Office Action rejected claims 1-48 under 35 U.S.C. 103(a) as being unpatentable over Ramesh (US 6,085,103) in view of Marchetto (US 5,414,734).

Applicant respectfully traverses the rejection to the extent such rejection may be considered applicable to the claims as amended. The applied references fail to disclose or suggest the inventions defined by Applicant's amended claims, and provide no teaching that would have suggested the desirability of modification to arrive at the claimed invention, as defined by amended independent claims 1, 13, 25 and 37, and the dependent claims.

As an example, the applied references fail to disclose or suggest a method of testing a plurality of wireless subscriber stations, comprising generating a broadcast signal, digitally creating in a digital processor a plurality of independently faded signals from the broadcast signal, and transmitting the plurality of digitally created, independently faded signals from a transmitter to each of the wireless subscriber stations under test, as set forth in amended claim 1.

Likewise, as another example, the applied references lack any teaching that would have suggested an apparatus to test a plurality of wireless subscriber stations, comprising a base station simulator configured to generate a broadcast signal, a digital processor configured to digitally create a plurality of independently faded signals from the broadcast signal, and an interface configured to transmit the digitally created plurality of independently faded signals to each of the wireless subscriber stations under test, as defined in amended claim 13.

As stated in the previous response filed February 14, 2008, and discussed above, both Ramesh and Marchetto are directed to systems that compensate signals that may be subjected to fading during transmission. Ramesh describes a system that compensates for fading in analog AM radio signals.<sup>5</sup> The Ramesh system includes a transmitter that compresses an analog AM signal to create gaps, and fills those gaps with pilot symbols having known characteristics.<sup>6</sup> Ramesh explains that "[t]he time-compressed analog AM signal is transmitted over the fading channel."<sup>7</sup> Using the known characteristics of the pilot symbols, a receiver in the Ramesh system

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<sup>5</sup> Ramesh, Title and Abstract

<sup>6</sup> Ramesh, Abstract

<sup>7</sup> Ramesh, Abstract (emphasis added)

is able to estimate the amount of fading that occurred in the transmission channel and adjust the amplitude and phase of the faded AM signal to compensate for the fading.<sup>8</sup>

Marchetto is also directed to a system that compensates signals that may experience fading during transmission. Again, like Ramesh, the Marchetto system includes a transmitter that inserts pilot symbols within a signal and transmits the signal.<sup>9</sup> Marchetto states that the transmitted signal is subject to loss of data due to fading.<sup>10</sup> A receiver in the Marchetto system computes various impulse response estimates from the received signal using the pilot symbols in order to adjust the data bearing signals.<sup>11</sup> In this manner, the receiver in the Marchetto system “compensates for fading and interference.”<sup>12</sup>

Hence, as discussed previously, the Ramesh and Marchetto references both describe receivers in which pilot symbols inserted into received signals are used to compensate for fading that may have occurred during the transmission of the signals. Neither reference makes any mention of testing wireless subscriber stations, much less digitally creating independently faded signals from a broadcast signal. Nor do such references describe transmitting the digitally created, independently faded signals to each of a plurality of wireless subscriber stations under test. Rather, each reference focuses on compensating a received signal for actual fading that has occurred as a result of propagation of the signal in a transmission environment.

Neither Ramesh nor Marchetto would have suggested digitally creating independently faded signals. Instead, Ramesh and Marchetto both describe signals that are faded as the signal propagates from a transmitter to a receiver in a wireless transmission environment. Ramesh explains that a radio transmitter and receiver are separated by a transmission path or channel and fading occurs in the transmission path or channel due to obstacles located along the transmission path.<sup>13</sup> Similarly, Marchetto refers fading or out of phase signals that may result from reflections off of man-made or other natural surfaces.<sup>14</sup> Reference numerals 68 and 70 in FIG. 3 of Marchetto depict Rayleigh fading channels that arise within the transmit environment. Clearly,

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<sup>8</sup> Ramesh, Abstract

<sup>9</sup> Marchetto, Abstract.

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

<sup>12</sup> *Id.*

<sup>13</sup> Ramesh, column 1, lines 11-22.

<sup>14</sup> Marchetto, column 1, lines 15-23.

the faded signals are not digitally created and transmitted. Instead, the faded signals described by Ramesh and Marchetto naturally experience fading as they are transmitted along a transmission path.

Accordingly, neither Ramesh nor Marchetto teaches transmitting digitally created, independently faded signals from a transmitter to each wireless subscriber station under test. The Examiner cited column 6, lines 17-21, of Ramesh as disclosing creation of faded signals. Applicant disputes the Examiner's contention that separation of a received analog input signal into faded pilot symbols and faded AM signals could be considered digital creation of independently faded signals, for at least the reasons already stated above. Moreover, to the extent the Examiner's contention would have any merit, it is clear that the purported "creation" in Ramesh would occur at the receiver. Hence, there is no digital creation and transmission of independently faded signals in Marchetto, nor Ramesh.

To the contrary, as described above, the faded signals are created in the transmission channel, e.g., due to physical obstacles, and are received by the Ramesh and Marchetto systems. Indeed, Ramesh and Marchetto describe fading as an undesirable side-effect of wireless signal transmission. Ramesh refers to fading as a major problem,<sup>15</sup> while Marchetto refers to "several propagation phenomena that greatly impact on the strength of the signal at the receiver."<sup>16</sup> Both Ramesh and Marchetto are directed to techniques that compensate for the undesirable effect of signal fading at a receiver, and not techniques that purposefully generate independently faded signals by digital creation and transmit such digitally created signals for testing purposes, e.g., as required by Applicant's independent claim 1. The fading of a signal during its propagation along a transmit path clearly does not involve digital creation of a faded signal.

With respect to amended claim 13, the Examiner did not point to any apparatus in Ramesh or Marchetto having a base station simulator configured to generate a broadcast signal, a digital processor configured to digitally create a plurality of independently faded signals from the broadcast signal, and an interface configured to transmit the digitally create a plurality of independently faded signals to each of the wireless subscriber stations under test. With reference to Ramesh, notwithstanding the other discrepancies noted above, the Examiner seemed to rely on

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<sup>15</sup> Ramesh, column 1, lines 10-15.

<sup>16</sup> Marchetto, column 1, lines 14-16.

features of two different devices, rather than a single apparatus. In particular, the Examiner cited column 3, lines 21-25, of Ramesh as disclosing a base station simulator configured to generate a broadcast signal, apparently referring to a transmitter labeled as "transmitter 10."<sup>17</sup>

The Examiner then cited column 6, lines 17-21 of Ramesh as disclosing a processor configured to create a plurality of independently faded signals. However, this feature of Ramesh resides within a receiver. It is unclear how one aspect of a transmitter could be combined with another aspect of a receiver to provide a base station simulator configured to generate a broadcast signal, a digital processor configured to digitally create a plurality of independently faded signals from the broadcast signal, and an interface to transmit the digitally created plurality of independently faded signals. The base station simulator, digital processor and interface all form part of the same apparatus. Yet, the various features of Ramesh and Marchetto, to the extent they are even relevant, reside in different devices, i.e., a transmitter and a receiver.

In view of the remarks above, it should be clear that Ramesh and Marchetto fail to disclose the requirements of Applicant's claims 1, 13, 25 and 37. On this basis, Applicant respectfully requests withdrawal of the rejection of claims 1-48 under section 103.

Each of dependent claims 2-12, 14-24, 26-36, and 38-48 incorporate the limitations of their respective independent claims and are allowable over Ramesh and Marchetto for at least the reasons described above. In addition, Ramesh and Marchetto also fail to disclose or suggest numerous additional limitations set forth in the dependent claims.

With respect to dependent claims 3, 14, 25, and 39, for example, Ramesh and Marchetto provide no teaching that would have suggested receiving a signal from each of the wireless subscriber stations under test, digitally creating at least one independently faded signal from each of the received signals, and generating a second broadcast signal for the wireless subscriber stations under test based on said at least one independently faded signal created from each of the received signals. For these features, the Examiner again cited Col. 6, lines 17-21, of Ramesh. However, the cited passage in Ramesh is completely unrelated to these features. Again, in the cited passage, Ramesh simply describes separation of a received analog input signal into faded pilot symbols and faded AM signals. Ramesh makes no mention of receiving a signal from a

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<sup>17</sup> FIG. 1; column 3, lines 15-45.

wireless subscriber station under test, and generating a second broadcast signal based on at least one independently faded signal that is digitally created from the received signal.

With respect to dependent claims 4, 16, 28 and 40, as another example, the Ramesh and Marchetto references fail to suggest converting each of the digitally created faded signals to an analog faded signal at a carrier frequency before transmitting the plurality of independently faded signals to their respective subscriber stations. The Office Action cited column 4, lines 3-10, of Ramesh and again cited column 7, lines 3-13, of Marchetto. Yet, the cited portion of Ramesh merely describes actions performed by the receiver, which does not transmit digitally created faded signals, as described in detail above. Claim 4 requires, however, that the digitally created faded signals are converted to an analog faded signal at a carrier frequency before transmitting the faded signals, not after or upon receiving the faded signals.

Moreover, the cited portion of Marchetto merely describes Rayleigh fading. Again, this portion of Marchetto describes fading caused by the presence of man-made objects along the transmission path, and not fading that is digitally created and then converted to an analog frequency at a specified carrier frequency prior to transmitting the signals. Thus, both Ramesh and Marchetto, whether considered alone or in combination, lack any teaching to suggest converting each of the digitally created faded signals to an analog faded signal at a carrier frequency before transmitting the plurality of independently faded signals to their respective subscriber stations, as set forth by each of dependent claims 4, 16, 28 and 40.

### **New Claims**

Applicant has added new claims 49 and 50. New claims 49 and 50 introduce no new matter.

The prior art references fail to disclose or suggest a method for testing wireless subscriber stations, the method comprising generating a broadcast signal in a base station simulator separate from the wireless subscriber stations, digitally creating in a digital processor separate from the wireless subscriber stations a plurality of independently faded signals from the broadcast signal, and transmitting the plurality of digitally created, independently faded signals from one or more transmitters associated with the digital processor to one or more of the wireless subscriber stations, as set forth in new claim 49.



In addition, the prior art does not disclose or suggest a system comprising a plurality of wireless subscriber stations, and an apparatus, separate from the wireless subscriber stations, to test the plurality of wireless subscriber stations, the apparatus comprising a base station simulator configured to generate a broadcast signal, a digital processor configured to digitally create independently faded signals from the broadcast signal, and an interface configured to transmit the digitally created, independently faded signals to one or more of the wireless subscriber stations, as set forth in new claim 50.

### CONCLUSION

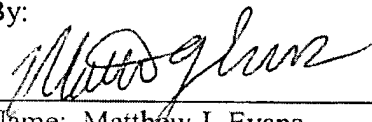
In the foregoing remarks, Applicant has focused on the requirements of the independent claims for purposes of conciseness. In so doing, Applicant in no way admits or acquiesces in the propriety of the Office Action in regard to the interpretation of the prior art or any of the additional limitations set forth in the various claims, including the limitations of the dependent claims.

All claims in this application are in condition for allowance. Applicant respectfully requests reconsideration and prompt allowance of all pending claims. Please charge any additional fees or credit any overpayment to deposit account number 17-0026. The Examiner is invited to telephone the below-signed attorney to discuss this application.

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